

West Virginia Advances Energy Efficiency

West Virginia is characterized by its pioneering spirit and long history of stewardship of natural resources. This traditional role makes West Virginians natural advocates of energy efficiency. For the past 25 years, West Virginia has partnered with the U.S. Department of Energy's (DOE) Weatherization Assistance Program (Weatherization) to reduce energy costs for low-income families by improving the energy efficiency of their homes, while ensuring their health and safety.

Low-income households typically spend 14% of their total annual income on energy, compared with 3.5% for other households. Sharply rising prices compound this problem. Low-income families often cut back on other necessities to pay their energy bills. Weatherization alleviates this heavy energy burden and helps low-income families become more self-sufficient.

ENERGY EFFICIENCY PIONEERS

Once a home to frontiersmen like Daniel Boone, today West Virginia pioneers energy efficiency innovations. The Office of Economic Opportunity, together with 13 local agencies, delivers weatherization services to eligible residents across the state. West Virginia integrates advanced technologies and building science to improve energy efficiency in low-income homes.

Weatherization auditors use a computerized energy audit to determine the most cost-effective measures to install in each home. Diagnostic tools, such as blower doors, digital manometers, and pressure pans, are used to measure and locate air infiltration. Crews use combustion analyzers and carbon monoxide detectors to test heating system efficiency and safety. Typical weatherization measures include installing insulation; tuning and repairing heating systems; sealing ducts; and mitigating air infiltration. Clients are also educated on energy saving tips and instructed on proper maintenance of the installed measures.

NATIONAL WEATHERIZATION PROGRAM

Homes weatherized in 1999	68,000
DOE allocations in 1999	\$135 million
Average annual energy cost savings per household	\$300
Average space heating savings	25-30%
Energy benefits returned for every \$1 invested	\$2.10
Jobs supported	7,000

WEST VIRGINIA

Homes weatherized in 1999 (with DOE \$)	1,026
DOE funding in 1999	\$1.9 million
Clients served in 1999	2,358
Elderly	17%
People with disabilities	23%
Families with children	34%

West Virginia utilizes a mobile training van to provide in-the-field training. The Weatherization technicians benefit greatly from this training approach because they do not have to travel out of their home area, are not limited to classroom demonstrations, and are able to install weatherization measures on client homes. Future plans include the publication of a field manual and computerized training slides on all aspects of residential energy efficiency. These highly technical jobs are part of the 7,000 jobs that the Weatherization Program supports nationwide.

HEALTH AND SAFETY INNOVATION

West Virginia's rich history is often overshadowed by its reputation as a major coal producer. The first brick street in the world was constructed in Charleston in 1873. While beautiful in design, the historic housing in West Virginia often needs major weatherization work. When Arthur Clarke* moved his family into their three-story home 35 years ago, he did not realize that his turn-of-the-century home lacked insulation. Now a retired widower, Arthur watched 12% of his fixed monthly income go to his natural gas bill. He applied for weatherization help at his local community action agency.

The weatherization crew performed an audit on Arthur's home and discovered considerable air infiltration around the light switches, electrical switches, and through a built-in bookshelf beside an original chimney. The crew remedied the air infiltration condition by blowing cellulose insulation in the walls and attic. Also, a combustion analysis of the furnace revealed high carbon monoxide, a colorless, odorless gas that can be deadly in large concentrations. The crew corrected the problem immediately. When the work was completed, Arthur joined the thousands of individuals nationwide who save an average of \$300 in annual energy costs following the weatherization of their homes.

An elderly, deaf couple applied to the North Central West Virginia Community Action Association for help with their old two-story mining camp home. The agency discovered high levels of carbon monoxide being emitted from two old, unvented natural gas space heaters and an unvented gas hot water tank. Weatherization technicians replaced the heating

appliances and properly vented the water heater. The agency also repaired ceilings, insulated the attic and the sidewalls, and weather-stripped the doors and windows.

In addition, with a grant from the U.S. Department of Agriculture's Rural Housing Program, the crew replaced the roof, built a new porch, and installed new plumbing. The family wrote to the agency that they had never asked for help in the past and that Weatherization truly was the answer to their prayers.

West Virginia illustrates its ongoing commitment to healthy homes through a broad outreach effort. The Community Action Agency of Southeastern West Virginia provides tips to the entire community about lowering the risk of carbon monoxide poisoning.



Weatherization technician tests gas range for carbon monoxide.

WEATHERIZATION WORKS!

Weatherization produces an array of benefits for low-income households and communities. Reducing residential energy demand decreases electricity generation and avoids emissions of nitrogen oxides, sulphur dioxide, and other pollutants. This improves local air quality and reduces adverse health effects, particularly asthma. Weatherization measures also mitigate residential and power plant emissions of greenhouse gases. Weatherization reduces annual carbon dioxide emissions by an average of one metric ton per weatherized home.

Nationally, for every \$1 invested in the program, Weatherization returns \$2.10 in energy-related benefits. Weatherization measures reduce national energy consumption and curb demand for imported oil. Weatherization works for West Virginia and America!

**Names have been changed to protect the privacy of the subjects.*

TO LEARN MORE ABOUT THE WEATHERIZATION ASSISTANCE PROGRAM, CONTACT:

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Visit the Weatherization Web site at: www.eren.doe.gov/buildings/weatherization_assistance
or call the Energy Efficiency and Renewable Energy Clearinghouse at: 1-800-DOE-3732



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